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APPLIED MATERIALS, INC.
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SANTA CLARA, CA 95050

EXAMINER

STEVENSON, ANDRE C

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 02/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,073

Applicant(s)

PARIKH ET AL.

Examiner

Andre' C. Stevenson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 16-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
 2. ☐ received in Application No. (Series Code / Serial Number) ____.
 3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 20) ☐ Other: ____

DETAILED ACTION

Claims 16 through 21 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1, 2, 3, 9 & 10**, are rejected under 35 U.S.C. 102(b) as being unpatentable over Campbell et al (U.S. Pat. No.6230069 B1).

Campbell et al (U.S. Pat. No.6230069 B1), for **Claim #1, 2, 3, 9 & 10**, a method comprising: testing a workpiece after one or more steps of processing within one or more independently operating tools; generating control parameters for previous and subsequent processing steps that are to be performed or have been performed on the workpiece by the independently operating tools; selectively supplying said control parameters to either the previous processing step or the subsequent processing step, or

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both to optimize the processing performed upon the workpiece, wherein workpiece is a semiconductor wafer and the independently operating tools are semiconductor wafer processing tools, independently operating tools comprise one or more of etch chamber, chemical-mechanical polishing tool, electrochemical plating cell, a physical vapor deposition chamber and a chemical vapor deposition chamber (Abstract, Column 2, lines 55 through 67, Column 3, lines 1 through 6, Column 7 lines 50 through 62).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **4, 5, 11 & 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al (U.S. Pat. No.6230069 B1) as applied to claims **1, 2, 3, 9 & 10** above, and further in view of Chen et al (U.S. Pat. No.5966312).

Campbell et al (U.S. Pat. No.6230069 B1) discloses the claimed invention except for testing step is performed by at least one metrology station, at least one metrology station performs blanket wafer tests and patterned wafer tests. Chen et al (U.S. Pat.

No.5966312) teaches that it is known to have a testing step is performed by at least one metrology station, at least one metrology station performs blanket wafer tests and patterned wafer tests.

Thus, claims **4, 5, 11 & 12**, method wherein testing step is performed by at least one metrology station, at least one metrology station performs blanket wafer tests and patterned wafer tests, is taught by Chen et al (U.S. Pat. No.5966312), (column 4, lines 58 through 67, column 5, lines 1 through 21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a testing step is performed by at least one metrology station, at least one metrology station performs blanket wafer tests and patterned wafer tests, as taught by Chen et al (U.S. Pat. No.5966312), since Chen et al (U.S. Pat. No.5966312) states at column 4, lines 58 through 67, column 5, lines 1 through 21 that at several stages of the fabrication process, process parameters are acquired using the test equipment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to

a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims #6, 7, 13 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al (U.S. Pat. No.6230069 B1), as applied to claims **1, 2, 3, 9 & 10** above, and further in view of Shibuya et al (U.S. Pat. No.4411982).

Campbell et al (U.S. Pat. No.6230069 B1) discloses the claimed invention except for wherein said semiconductor wafer processing tools comprise an electrochemical plating tool and a chemical mechanical polishing tool, testing step measures a uniformity and thickness of a layer deposited upon the semiconductor wafer using the electrochemical plating tool. Shibuya et al (U.S. Pat. No.4411982) teaches that it is known to have semiconductor wafer processing tools comprise an electrochemical plating tool and a chemical mechanical polishing tool, testing step measures a uniformity and thickness of a layer deposited upon the semiconductor wafer using the electrochemical plating tool.

Shibuya et al (U.S. Pat. No.4411982), for **Claims #6, 7, 13 & 14**, a method wherein said semiconductor wafer processing tools comprise an electrochemical plating tool and a chemical mechanical polishing tool, testing step measures a uniformity and thickness of a layer deposited upon the semiconductor wafer using the electrochemical plating tool, (Column 5, lines 14 through 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said semiconductor wafer processing tools comprise an electrochemical plating tool and a chemical mechanical polishing tool, testing step measures a uniformity and thickness of a layer deposited upon the semiconductor wafer using the electrochemical plating tool, as taught by Shibuya et al (U.S. Pat. No.4411982), since Shibuya et al (U.S. Pat. No.4411982)states at Column 5, lines 14 through 23 that such a modification would allow a necessary thickness to be formed on the substrate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims #8 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al (U.S. Pat. No.6230069 B1), as applied to claims **1, 2, 3, 9 & 10** above, and further in view of Satya et al (U.S. Pat. No.6433561 B1).

Campbell et al (U.S. Pat. No.6230069 B1) discloses the claimed invention except for wherein said generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge

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pressure profile, generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile. Satya et al (U.S. Pat. No.6433561 B1) teaches that it is known to have generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile, generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile.

Satya et al (U.S. Pat. No.6433561 B1), for **Claims #8 & 10**, a method wherein said generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile, generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile, (Column 10, lines 39 through 62, Column 7, lines 36 through 46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile, generating step produces control parameters for said chemical mechanical polishing tool comprising a pad rotational speed and a pad center-to-edge pressure profile, as taught by Satya et al (U.S. Pat. No.6433561 B1), since Satya et al

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(U.S. Pat. No.6433561 B1) states at Column 10, lines 39 through 62, Column 7, lines 36 through 46 that such a modification would allow the ability to detect defects.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre' Stevenson whose telephone number is (703) 308 6227. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (703) 308 3325. The fax phone number for the organization where this application or proceeding is assigned is (703) 308 7724.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956. Also, the proceeding numbers can be used to fax information through the Right Fax system;

- TC2800 Official Before-Final RightFAX - (703) 872-9318
- TC2800 Official After-Final RightFAX - (703) 872-9319
- TC2800 Customer Service RightFAX - (703) 872-9317

Andre' Stevenson

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01/22/02


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